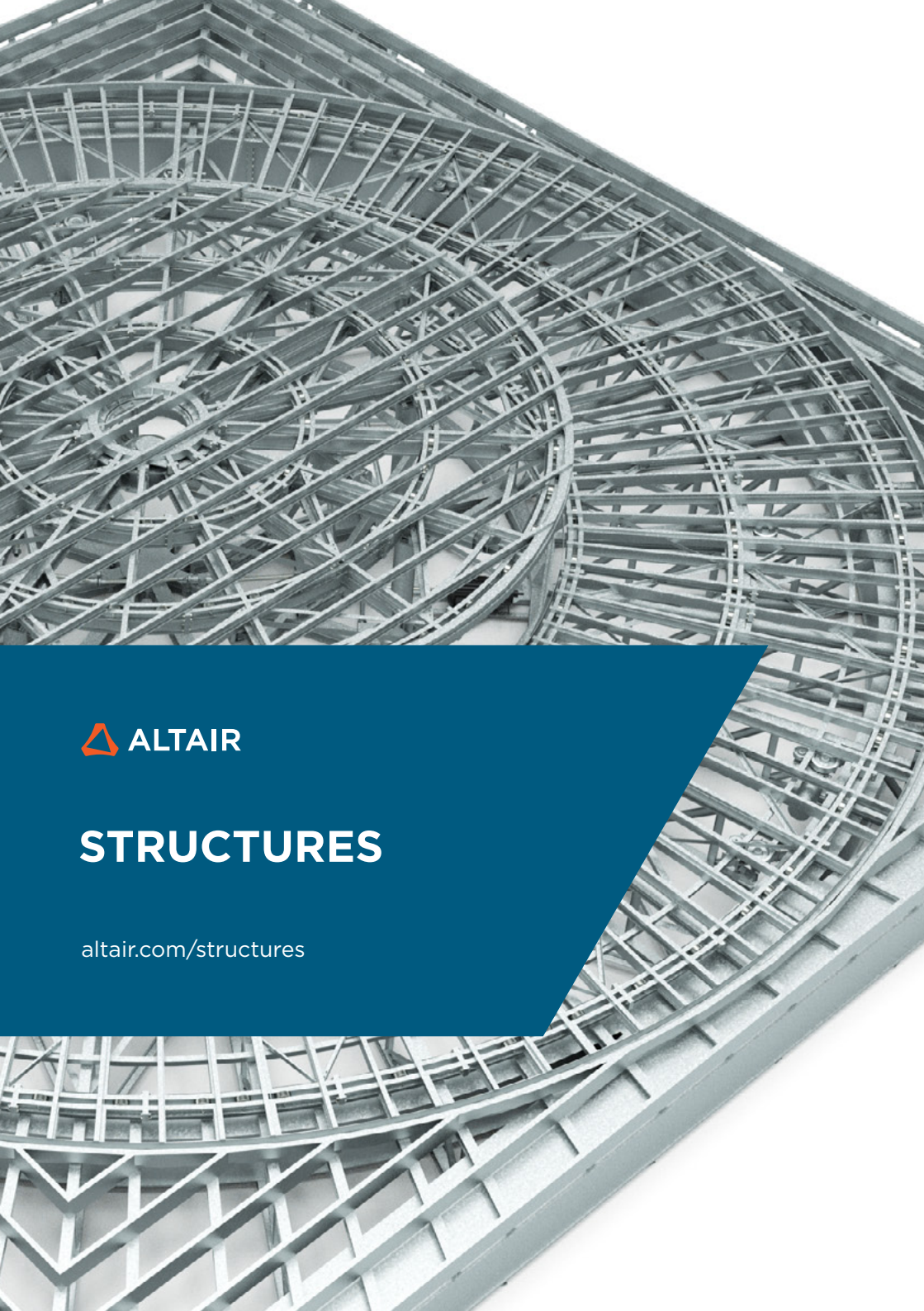


ALTAIR

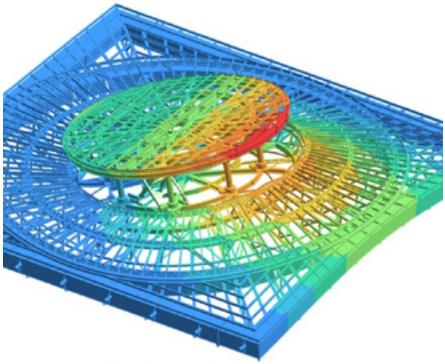
STRUCTURES

altair.com/structures

Proven accuracy every time. Altair offers industry-leading engineering analysis and optimization tools from simulation-driven design concepts to detailed virtual product validation, and simplified modeling workflows to advanced high-fidelity model building. Whether big or small, our customers trust their decision making to Altair, the pioneer of simulation-driven design.

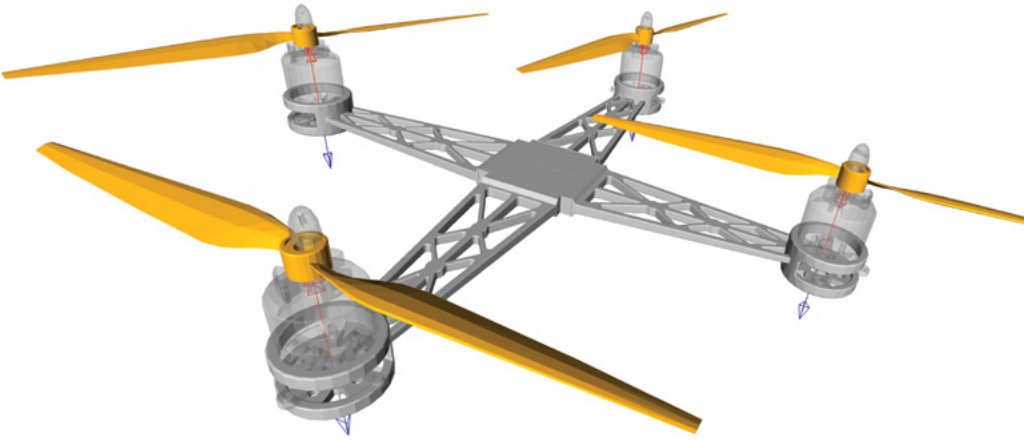
SIMULATION-DRIVEN DESIGN

The widespread adoption of Altair SimSolid™ has enabled customers to accurately test more ideas during each design iteration. Altair Inspire™ was the first tool to democratize topology optimization. Altair Inspire now embeds the speed and accuracy of SimSolid supporting faster, easier design exploration and product creation for allowing design engineers, product designers, and architects to create and investigate structurally efficient concepts for complex assemblies.



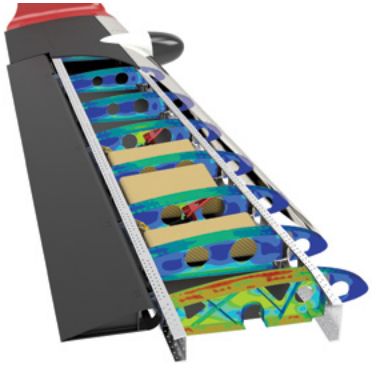
STRUCTURAL OPTIMIZATION

Altair OptiStruct™ is the original generative design tool. While the rest of the industry is still discovering how topology optimization delivers research projects, for the past two decades OptiStruct® has driven the innovative, lightweight and structurally efficient designs of products you see and use every day. OptiStruct also supports many other structural optimization methods, multi-disciplinary optimization, and provides a broad range of constraints, including traditional processes and additive manufacturing.



MODELING AND VISUALIZATION

Altair HyperWorks™ has introduced the next generation of market-leading Altair HyperMesh™, Altair HyperGraph™, and Altair HyperView™ tools combined with the math, scripting, and data analysis of Altair Compose®. The new HyperWorks® experience was created to enable your team to move from physics to physics, domain to domain, and even create reports without leaving your model. Altair SimLab™ provides simplified, automated multiphysics workflows with CAD associativity.

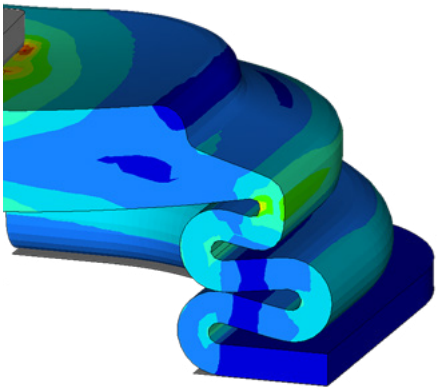


COMPOSITE MATERIALS

OptiStruct is widely used at the world's most innovative companies for the design and optimization of laminate composites. It delivers optimal ply shapes, the optimal number of plies, and the optimal stacking sequence, while observing manufacturing constraints. Altair Multiscale Designer™ provides accurate and efficient simulation of materials and parts manufactured with continuous and chopped fibers, honeycomb cores, lattice structures, and more.

LINEAR AND NONLINEAR ANALYSIS

In addition to optimization, OptiStruct is a fast, industry proven, structural analysis solver for linear and nonlinear problems under static and dynamic loadings. It provides efficient solutions for contacts, heat transfer, bolt and gasket modeling, and hyperelastic materials. OptiStruct is used by thousands of companies worldwide to analyze and optimize structures for strength, durability and stiffness characteristics. Altair MotionSolve™ is used to determine loading conditions.



DURABILITY

Durability is an important feature of a product to ensure customer loyalty. Building upon the solver capabilities of OptiStruct, Altair HyperLife™ provides a comprehensive and easy to use durability analysis workflow directly interfacing with major finite element analysis result files. With an embedded material database, HyperLife offers solutions for fatigue life predictions under static and transient loading across a wide range of industrial applications.

DISCRETE ELEMENT MODELING

Altair EDEM™ is the market-leading software for bulk material simulation. Powered by state-of-the-art Discrete Element Modeling (DEM) technology, EDEM® quickly and accurately simulates and analyzes the behavior of bulk materials such as as coal, mined ores, soils, fibers, grains, tablets, and powders. EDEM simulation provides engineers with crucial insight into how those materials will interact with their equipment during a range of operation and process conditions.

CRASH AND IMPACT

Understanding the safety implications of design decisions is essential across many industries. Altair provides the tools required to bring certainty to engineering simulations including those requiring multiphysics simulation, advanced materials, accurate dummy positioning and airbag folding. Altair provides detailed modeling and assembly workflows in HyperWorks for scalable and robust analysis using Altair Radioss™ with the highly detailed Humanetics Dummies.

NOISE AND VIBRATION

The advanced noise, vibration & harshness (NVH) analysis in OptiStruct includes one-step transfer path analysis (TPA), powerflow analysis, model reduction techniques (CMS and CDS super elements), design sensitivities, and an equivalent radiated power (ERP) design criterion. In addition, automated multi-level sub-structuring Eigen solver (AMSES) rapidly calculates thousands of modes with millions of degrees of freedom. Perceived quality is further addressed by Altair Squeak & Rattle Director™.

Learn how Altair can help you
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Expanded Options.
Faster Results. Better Products.

The Altair Partner Alliance (APA) features on-demand third-party applications that run on the Altair licensing platform. Through the APA customers benefit from a growing portfolio extends their simulation and design capabilities to help create better products faster.

The APA complements Altair's industry-leading engineering analysis and optimization tools from simulation-driven to provide technology-driven solutions that ensure more robust and structurally sound solutions.

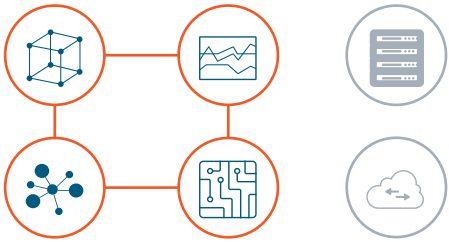
Find out what the APA has to offer at **altair.com/APA**

DISCOVER HOW ALTAIR CAN REVOLUTIONIZE YOUR APPROACH TO INNOVATION

Altair pioneered a patented, units-based, subscription licensing model for software which has transformed the way our customers streamline product innovation and get to market faster. Customers have full access to all our software instantly, including more than 150 partner products, and can run these applications on-demand locally or in the cloud. Packaged as a comprehensive set of applications, our units-based structure is scalable, shareable, and more cost effective than obtaining individual licenses.

POOL OF UNITS

Users draw units from the pool to access multiple products, across any location.

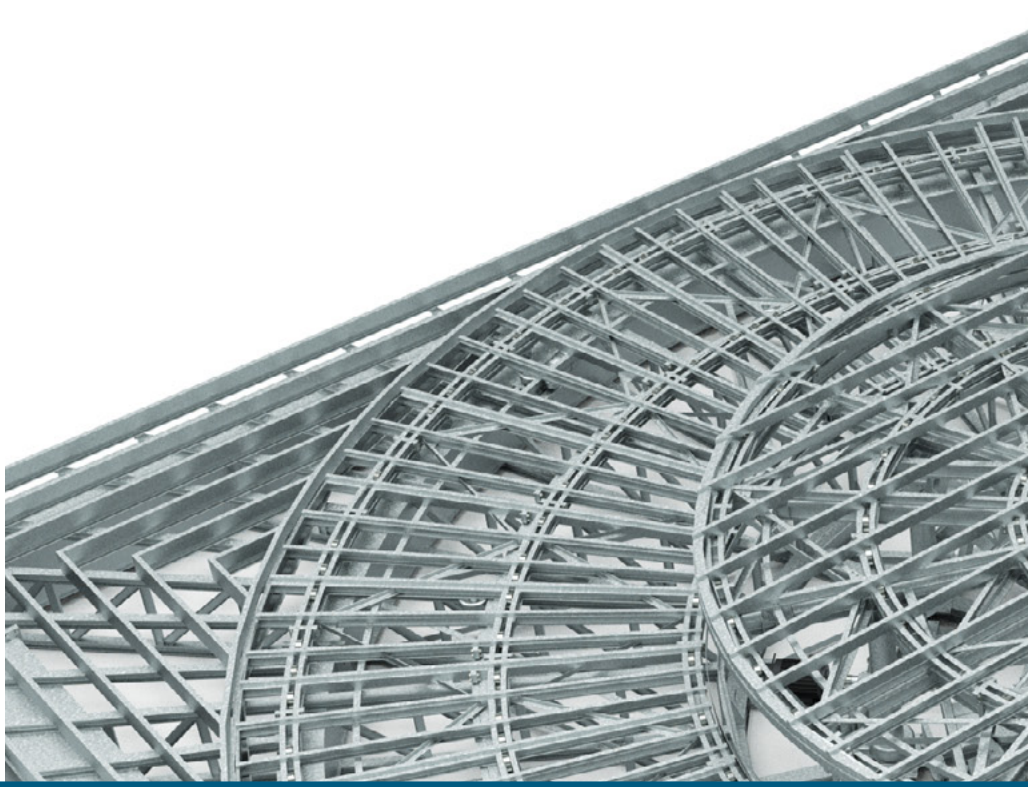


CHOICE OF APPLICATION

Maximizing software dollars through the flexibility of choice.

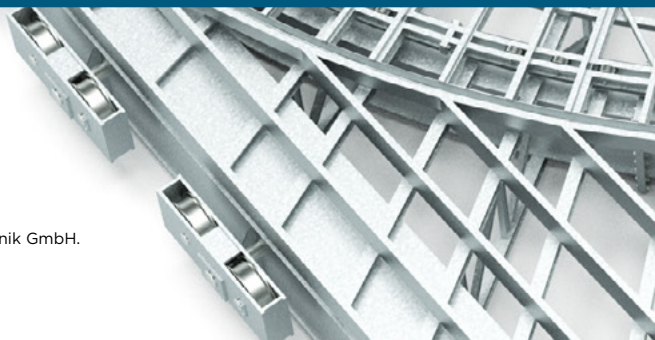
FREEDOM TO USE HOWEVER NEEDED

Best of all, you can maintain your license and run workloads anywhere your team's infrastructure is located, on your workstations, servers and HPC resources that are on premises, in the cloud or in a hybrid environment.



Altair is a global technology company that provides software and cloud solutions in the areas of product development, high performance computing (HPC) and data analytics. Altair enables organizations across broad industry segments to compete more effectively in a connected world while creating a more sustainable future.

To learn more, please visit **altair.com**



Stage wagon of Qintai Culture & Art Center in Wuhan, China. Image source: SBS Bühnentechnik GmbH.